

Appendix A References

A-1. Required Publications

TM 5-810-1

Mechanical Design, HVAC

ER 1105-2-100

Guidance for Conducting Civil Works Planning Studies

ER 1110-2-103

Strong Motion Instrument for Recording Earthquake Motions on Dams

EM 1110-2-3001

Planning and Design of Hydroelectric Power Plant Structures

EM 1110-2-4205

Hydroelectric Power Plant Mechanical Design

CE 4000

Civil Works Guide Specification for Lump Sum Contract for Engineering Services for Design of Hydroelectric Power Plant

CW-13331

Civil Works Guide Specification for Supervisory Control and Data Acquisition Equipment

CW-16120

Civil Works Guide Specification for Insulated Wire and Cable

CW-16211

Civil Works Guide Specification for Rewind of Hydraulic-Turbine-Driven Alternating Current Generators

CW-16252

Civil Works Guide Specification for Governors for Hydraulic Turbines and Pump Turbines

CW-16320

Civil Works Guide Specification for Power Transformers

AIEE Transactions on Power Apparatus and Systems, 1953 (Oct)

Characteristics of Split-Phase Currents as a Source of Generator Protection, Paper 53-314.

ANSI C2-1993

National Electrical Safety Code

ANSI C37.06-1987

American National Standard for Switchgear - AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis - Preferred Ratings and Related Required Capabilities

ANSI C37.16-1980

American National Standard Preferred Ratings, Related Requirements, and Application Recommendations for Low-Voltage Power Circuit Breakers and AC Power Circuit Protectors

ANSI C37.90.1-1989

IEEE Standard Surge Withstand Capability (SWC) Test for Protective Relays and Relay Systems (ANSI)

ANSI C80.1-1983

Rigid Steel Conduit-Zinc Coated

ANSI C84.1-1989

American National Standard Voltage Ratings for Electric Power Systems and Equipment (60 Hz)

ANSI/IEEE 242-1986

IEEE Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems

ANSI/ISA S18.1-1981

Annunciator Sequence and Specifications

EPRI EL-5036

Power Plant Electrical Reference Series, Vol. 2, "Power Transformers"

EPRI EL-5036

Power Plant Electrical Reference Series, Vol. 4, "Wire and Cable"

EPRI EL-5036

Power Plant Electrical Reference Series, Vol. 5, "Grounding and Lightning Protection"

EPRI EL-5036

Power Plant Electrical Reference Series, Vol. 9, "DC Distribution"

EPRI EL-5036

Power Plant Electrical Reference Series, Vol. 10, "Electrical and Instrumentation"

EPRI EL-5036

Power Plant Electrical Reference Series, Vol. 13, "Communications"

EPRI TR-101710, 1993

EPRI Lighting Fundamentals Handbook

IEEE Transactions on Power Apparatus and Systems, 1983

IEEE Transactions on Power Apparatus and Systems, 1983, Vol PAS-102, No. 9 (September).

IEEE Transactions on Power Apparatus and Systems, 1983

IEEE Transactions on Power Apparatus and Systems, 1983, Vol PAS-102, No. 10 (October).

IEEE 43-1974

IEEE Recommended Practice for Testing Insulation Resistance of Rotating Machinery (ANSI)

IEEE 80-1986

IEEE Guide for Safety in AC Substation Grounding (ANSI)

IEEE 81-1983

IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System

IEEE 115-1983

IEEE Test Procedures for Synchronous Machines (ANSI)

IEEE 142-1991

IEEE Recommended Practice for Grounding of Industrial and Commercial Power Systems (ANSI)

IEEE 399-1990

IEEE Recommended Practice for Power Systems Analysis

IEEE 422-1986

IEEE Guide for Design and Installation of Cable Systems in Power Generating Stations (ANSI)

IEEE 450-1987

IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations (ANSI)

IEEE 484-1987

IEEE Recommended Practice for Installation Design and Installation of Large Lead Storage Batteries for Generating Stations and Substations (ANSI)

IEEE 485-1983

IEEE Recommended Practice for Sizing of Large Lead Storage Batteries for Generating Stations and Substations (ANSI)

IEEE 605-1987

IEEE Guide for Design of Substation Rigid-Bus Structures (ANSI)

IEEE 946-1992

IEEE Recommended Practice for the Design of DC Auxiliary Power Systems for Generating Stations

IEEE 979-1984 (Reaffirmed 1988)

IEEE Guide for Substation Fire Protection (ANSI)

IEEE 980-1987

IEEE Guide for Containment and Control of Oil Spills in Substations (ANSI)

IEEE 1010-1987

IEEE Guide for Control of Hydroelectric Power Plants (ANSI)

IEEE C37.013-1988

IEEE Standard for AC High-Voltage Generator Circuit Breakers Rated on a Symmetrical Current Basis (ANSI)

IEEE C37.122 (with Supplement .122a)-1983

IEEE Standard for Gas Insulated Substations (ANSI)

IEEE C37.123-1991

IEEE Guide to Specification for Gas-Insulated Substation Equipment (ANSI)

IEEE C37.2

Electrical Power System Device Function Numbers

IEEE C37.20.2-1987

IEEE Standard for Metal-Clad and Station-Type Cubicle Switchgear (ANSI)

IEEE C37.23-1987

IEEE Standard for Metal-Enclosed Bus and Calculating Losses in Isolated-Phase Bus (ANSI)

IEEE C37.91-1985 (Reaffirmed 1990)

IEEE Guide for Protective Relay Applications to Power Transformers (ANSI)

IEEE C37.95-1989

Guide for Protective Relaying of Utility Customer Interconnections (ANSI)

IEEE C37.96-1988

IEEE Guide for AC Motor Protection (ANSI)

IEEE C37.97-1979 (Reaffirmed 1990)

IEEE Guide for Protective Relay Applications to Power Systems Buses (ANSI)

IEEE C37.101-1985 (Reaffirmed 1990)

IEEE Guide for Generator Ground Protection (ANSI)

IEEE C37.102-1987 (Reaffirmed 1991)

IEEE Guide for AC Generator Protection

IEEE C37.106-1987

IEEE Guide for Abnormal Frequency Protection for Power Generating Plants (ANSI)

IEEE C57.12.00-1987

IEEE Standard General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers (ANSI)

IEEE C57.12.11-1980

IEEE Guide for Installation of Oil-Immersed Transformers (10MVA and Larger, 69 kV - 287 kV Rating) (ANSI)

IEEE C57.12.14-1982

IEEE Trial Use Standard for Dielectric Test Requirement for Power Transformers for Operation at System Voltage from 115 kV through 230 kV

IEEE C57.12.90-1987

IEEE Standard Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers; and Guide for Short-Circuit Testing of Distribution and Power Transformers (ANSI)

IEEE C57.19.01-1991

IEEE Standard Performance Characteristics and Dimensions for Outdoor Apparatus Bushings (ANSI)

IEEE C57.98-1986

IEEE Guide for Transformer Impulse Tests (ANSI)

IEEE C57.104-1991

IEEE Guide for the Interpretation of Gases Generated in Oil-Immersed Transformers

IEEE C57.116-1989

IEEE Guide for Transformers Directly Connected to Generators (ANSI)

IEEE C57.120-1991

IEEE Standard Loss Evaluation Guide for Power Transformers and Reactors (ANSI)

IEEE C62.1-1989

IEEE Standard for Gapped Silicon-Carbide Surge Arresters for AC Power Circuits (ANSI)

IEEE C62.11-1987

IEEE Standard for Metal-Oxide Surge Arresters for AC Power Circuits (ANSI)

IEEE C62.2-1987

IEEE Guide for the Application of Gapped Silicon-Carbide Surge Arresters for Alternating Current Systems (ANSI)

IEEE C62.92.2-1989

IEEE Guide for Grounding in Electrical Utility Systems, Part II - Grounding of Synchronous Generator Systems (ANSI)

IES-RP-24-1989

VDT Lighting

NEMA PE 1-1983

Uninterruptible Power Systems

NEMA PE 5-1985

Utility Type Battery Chargers

NEMA PE 7-1985

Communication Type Battery Chargers

NEMA WC 50-1976

Ampacities, Including Effect of Shield Losses for Single-Conductor Solid-Dielectric Power Cable 15 kV through 69 kV

NEMA WC 51-1986

Ampacities of Cables in Open-Top Cable Trays

NFPA 70-1993

"National Electric Code," Article 480

EM 1110-2-3006
30 Jun 94

NFPA 101-1991

Code for Safety to Life from Fire in Buildings and Structures

UL 50-1980

Cabinets and Boxes

UL 489-1986

The Standard for Molded-Case Circuit Breakers and Circuit-Breaker Enclosures

UL 1072-1988

The Standard for Medium-Voltage Power Cables

UL 1569-1985

The Standard for Metal-Clad Cables

Dawes, C. A.

Dawes, Chester A., *Electrical Engineering, Vol II, Alternating Currents*, McGraw Hill Book Co., 1947.

Fitzgerald and Kingsley, Jr.

Fitzgerald, A. E., and Kingsley, Charles Jr., *Electric Machinery*, McGraw Hill, 1961.

Kaufman

Kaufman, J. E., ed. *IES Lighting Handbook*. New York: Illuminating Engineering Society (IES); Reference Volume, 1984.

Kent 1950

Kent, William 1950. "Mechanical Engineers Handbook," John Wiley and Sons, Inc.

Marks 1951

Marks, Lionel S. 1951. "The Mechanical Engineers' Handbook," McGraw-Hill Book Co., New York.

Puchstein, Lloyd, and Conrad

Puchstein, A. F., Lloyd, T. C., Conrad, A. G. *Alternating Current Machines*, John Wiley & Sons, 1954.

A-2. Related Publications

ER 1105-2-100

Guidance for Conducting Civil Works Planning Studies

ETL 1110-3-376

Telephone System

ANSI C2-1993

National Electric Safety Code

ANSI C37.12-1981

American National Standard Guide Specifications for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis and Total Current Basis

ANSI C37.32-1979

American National Standard Schedules of Preferred Ratings, Manufacturing Specifications and Application Guide for High-Voltage Air Switches, Bus Supports, and Switch Accessories

ANSI C50.12-1982

American National Standard Requirements for Salient-Pole Synchronous Generators and Generator/Motors for Hydraulic Turbine Applications

ANSI C84.1-1989

American National Standard Voltage Ratings for Electric Power Systems and Equipment (60 Hz)

ANSI C93.1-1972

Requirements for Powerline Coupling Capacitors

ANSI C93.2-1976

Requirements for Powerline Coupling Capacitor Voltage Transformers

ANSI C93.3-1981

Requirements for Powerline Carrier Traps

ANSI/NFPA 851-1987

Recommended Practice for Fire Protection for Hydroelectric Generating Plants

EPRI EL-5036

Power Plant Electrical Reference Series, Vols. 1, 2, 3, 5, 7, and 8.

Electric Utility Engineering Reference Book

Electric Utility Engineering Reference Book - Distribution Systems, Volume 3, available from:

ABB Power T&D Services Co
1021 Main Campus Drive
Raleigh, NC 27606

IEEE 1-1986

General Principles Upon Which Temperature Limits are Based in the Rating of Electric Machines and Other Equipment

IEEE 32-1972

IEEE Standard Requirements Terminology and Test Procedures for Neutral Grounding Devices (ANSI)

IEEE 56-1977

IEEE Guide for Insulation Maintenance of Large AC Rotating Machinery (10,000 kVA and larger) (ANSI)

IEEE 80-1986

IEEE Guide for Safety in AC Substation Grounding (ANSI)

IEEE 94-1991

IEEE Recommended Definitions of Terms for Automatic Generation Control on Electric Power Systems

IEEE 95-1977

IEEE Recommended Practice for Insulation Testing of Large AC Rotating Machinery with High Direct Voltage (ANSI)

IEEE 141-1986

IEEE Recommended Practice for Electric Power Distribution for Industrial Plants (ANSI)

IEEE 242-1986

IEEE Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems (ANSI)

IEEE 275-1981

IEEE Recommended Practice for Thermal Evaluation of Insulation Systems for AC Electric Machinery Employing Form-Wound Pre-Insulated Stator Coils, Machines Rated 6900 V and Below (ANSI)

IEEE 281-1984

IEEE Standard Service Conditions for Power System Communication Equipment (ANSI)

IEEE 286-1975

IEEE Recommended Practice for Measurement of Power Factor Tip-Up of Rotating Machinery Stator Coil Insulation (ANSI)

IEEE 367-1987

IEEE Recommended Practice for Determining the Electric Power Station Ground Potential Risk and Induced Voltage from a Power Fault (ANSI)

IEEE 400-1991

IEEE Guide for Making High-Direct-Voltage Tests on Power Cable Systems in the Field (ANSI)

IEEE 421.1-1986

IEEE Standard Definitions for Excitation Systems for Synchronous Machines (ANSI)

IEEE 421.2-1990

IEEE Guide for Identification, Testing, and Evaluation of the Dynamic Performance of Excitation Control Systems (ANSI)

IEEE 421B-1979

IEEE Standard for High-Potential Test Requirements for Excitation Systems for Synchronous Machines (ANSI)

IEEE 422-1986

IEEE Guide for Design and Installation of Cable Systems in Power Generating Stations (ANSI)

IEEE 433-1974

IEEE Recommended Practice for Insulation Testing of Large AC Rotating Machinery with High Voltage at Very Low Frequency (ANSI)

IEEE 434-1973

IEEE Guide for Functional Evaluation of Insulation Systems for Large High-Voltage Machines (ANSI)

IEEE 446-1987

IEEE Recommended Practice for Emergency and Standby Power Systems for Industrial and Commercial Applications (ANSI)

IEEE 487-1987

IEEE Recommended Practice for the Protection of Wire Line Communications Facilities Serving Electric Power Stations

IEEE 487-1992

IEEE Recommended Practice for the Protection of Wire Line Communications Facilities Serving Electric Power Stations

IEEE 492-1974

IEEE Guide for Operation and Maintenance of Hydro Generators (ANSI)

IEEE 525-1992

IEEE Guide for Design and Installation of Cable Systems in Substations

IEEE 643-1980

IEEE Guide for Power-Line Carrier Applications (ANSI)

IEEE 665-1987

IEEE Guide for Generating Station Grounding (ANSI)

IEEE 693-1984

IEEE Recommended Practices for Seismic Design of Substations (ANSI)

IEEE 739-1984

IEEE Recommended Practice for Energy Conservation and Cost-Effective Planning in Industrial Facilities (ANSI)

IEEE 789-1988

IEEE Standard Performance Requirements for Communications and Control Cables for Application in High Voltage Environments (ANSI)

IEEE 810-1987

IEEE Standard for Hydraulic Turbine and Generator Integrally Forged Shaft Couplings and Shaft Runout Tolerances (ANSI)

IEEE 944-1986

IEEE Application and Testing of Uninterruptible Power Supplies for Power Generating Stations (ANSI)

IEEE 979-1984

IEEE Guide for Substation Fire Protection (ANSI)

IEEE 980-1987

IEEE Guide for Containment and Control of Oil Spills in Substations (ANSI)

IEEE 999-1992

IEEE Recommended Practice for Master/Remote Supervisory Control and Data Acquisition (SCADA) Communication

IEEE 1020-1988

IEEE Guide for Control of Small Hydroelectric Power Plants (ANSI)

IEEE 1050-1989

IEEE Guide for Control Equipment Grounding in Generating Stations

IEEE 1095-1989

IEEE Guide for Installation of Vertical Generators and Generator/Motors for Hydroelectric Applications

IEEE 1119-1988

IEEE Guide for Fence Safety Clearances in Electric-Supply Stations (ANSI)

IEEE C37.010 (with Supplements .010 b and e)-1979

IEEE Application Guide for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis (ANSI)

IEEE C37.011-1979

IEEE Application Guide for Transient Recovery Voltage for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis (ANSI)

IEEE C37.04 (with Supplements .04 f, g, h)-1979

IEEE Standard Rating Structure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis (ANSI)

IEEE C37.081-1981

IEEE Guide for Synthetic Fault Testing of AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis (ANSI)

IEEE C37.09 (with Supplements .09 c and e)-1979

IEEE Standard Test Procedure for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis (ANSI)

IEEE C37.1-1987

IEEE Standard Definitions, Specification, and Analysis of Systems Used for Supervisory Control, Data Acquisition and Automatic Control (ANSI)

IEEE C37.11-1979

IEEE Application Guide for Transient Recovery Voltage for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis (ANSI)

IEEE C37.13-1990

IEEE Standard for Low-Voltage AC Power Circuit Breakers Used in Enclosures (ANSI)

IEEE C37.14-1979

IEEE Standard for Low-Voltage DC Power Circuit Breakers Used in Enclosures (ANSI)

IEEE C37.20.1-1987

IEEE Standard for Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear (ANSI)

IEEE C37.29-1981

IEEE Standard for Low-Voltage AC Power Circuit Protectors Used in Enclosures (ANSI)

IEEE C37.30-1992

IEEE Standard Definitions and Requirements for High-Voltage Air Switches

IEEE C37.34 (with Supplements .34 a, b, d, and e)-1979

IEEE Standard Test Code for High-Voltage Air Switches (ANSI)

IEEE C37.35-1976

IEEE Guide for the Application, Installation, Operation, and Maintenance of High-Voltage Air Disconnecting and Load Interrupter Switches (ANSI)

IEEE C37.36B-1990

IEEE Guide to Current Interruption with Horn-Gap Air Switches (ANSI)

IEEE C37.37-1979

IEEE Standard Loading Guide for AC High-Voltage Switches (in excess of 1000 volts) (ANSI)

IEEE C37.38-1989

IEEE Standard for Gas-Insulated Metal-Enclosed Disconnecting, Interrupter, and Grounding Switches

IEEE C39.96-1988

IEEE Guide for AC Motor Protection (ANSI)

IEEE C57.12.01-1989

IEEE Standard General Requirements for Dry-Type Distribution and Power Transformers Including Those with Solid Cast and/or Resin-Encapsulated Windings (ANSI)

IEEE C57.12.12-1980

IEEE Guide for Installation of Oil-Immersed EHV Transformers 345 kV and Above (ANSI)

IEEE C57.13.1-1981 (Reaffirmed 1986)

IEEE Guide for Field Testing of Relaying Current Transformers (ANSI)

IEEE C57.19.00-1991

IEEE General Requirements and Test Procedure for Outdoor Power Apparatus Bushings (ANSI)

IEEE C57.19.101-1989

IEEE Trial-Use Guide for Loading Power Apparatus Bushings

IEEE C57.92-1981

IEEE Guide for Loading Mineral-Oil-Immersed Power

Transformers up to and Including 100 MVA with 55 °C or 65 °C Winding Rise (ANSI)

IEEE C57.94-1982

IEEE Recommended Practice for Installation, Application, Operation and Maintenance of Dry-Type General Purpose Distribution and Power Transformers (ANSI)

IEEE C57.106-1991

IEEE Guide for Acceptance and Maintenance of Insulating Oil in Equipment

IEEE C57.109-1985

IEEE Guide for Transformer Through-Fault Current Duration (ANSI)

IEEE C57.113-1991

IEEE Guide for Partial Discharge Measurement in Liquid-Filled Power Transformers and Shunt Reactors

IEEE C57.114-1990

IEEE Seismic Guide for Power Transformers and Reactors (ANSI)

IEEE C57.115-1991

IEEE Guide for Loading Mineral-Oil-Immersed Power Transformers Rated in Excess of 100MVA (65°C Winding Rise) (ANSI)

IEEE C62.22-1991

IEEE Guide for the Application of Metal-Oxide Surge Arresters for Alternating Current Systems (ANSI)

IEEE C62.92-1987

IEEE Guide for the Application of Neutral Grounding in Electric Utility Systems, Part I-Introduction (ANSI)

IEEE C62.92.1-1987

IEEE Guide for the Application of Neutral Grounding in Electric Utility Systems, Part I - Introduction (ANSI)

IEEE C62.92.2-1989

IEEE Guide for the Application of Neutral Grounding in Electric Utility Systems, Part II-Grounding of Synchronous Generator Systems (ANSI)

IEEE C62.92.5-1992

IEEE Guide for the Application of Neutral Grounding in Electric Utility systems, Part V - Transmission Systems and Subtransmission Systems

EM 1110-2-3006
30 Jun 94

NEMA ICS 1-1983
Industrial Control and Systems

NEMA ICS 2-1988
Industrial Control Devices, Controllers and Assemblies

NEMA ICS 6-1983
Enclosures for Electrical Controls and Systems

NEMA PB 1-1990
Panelboards

NEMA PB 2-1989
Deadfront Distribution Switchboards

NEMA ST 20-1986
Dry-Type Transformers for General Applications

NEMA VE 1-1984
Metallic Cable Tray Systems

NEMA WC 50-1976
Ampacities, Including Effect of Shield Losses for Single-Conductor Solid-Dielectric Power Cable 15 kV through 69 kV

NEMA WC 51-1986
Ampacities of Cables in Open-Top Cable Trays

NEMA WD 1-1983
Wiring Devices

NFPA 70-1993
National Electrical Code

UL 6-1981
Rigid Metal Conduit

UL 467-1984
Grounding and Bonding Equipment

UL 514B-1982
Fittings for Conduit and Outlet Boxes

UL 845-1987
The Standard for Motor Control Centers

UL 1066-1985
The Standard for Low-Voltage AC and DC Power Circuit Breakers Used in Enclosures

UL 1072-1988
The Standard for Medium-Voltage Power Cables

UL 1236-1986
The Standard for Battery Chargers

UL 1277-1988
The Standard for Electrical Power and Control Tray Cables with Optional Optical-Fiber Members

UL 1558-1983
The Standard for Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear

UL 1561-1988
The Standard for Large General Purpose Transformers

UL 1564-1985
The Standard for Industrial Battery Chargers

UL 1569-1985
The Standard for Metal-Clad Cables

Beeman
Beeman, D. L., Ed., *Industrial Power Systems Handbook*. New York: McGraw-Hill, 1955.

Helms
Helms, R. N. *Illuminating Engineering for Energy Efficiency*. New York: Prentice-Hall.